# "Nature Still": Second Nature in Bacon and Pope

Sam Hushagen


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# "Nature Still": Second Nature in Bacon and Pope

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**Abstract.** Recent scholarship under the heading "distributed cognition" advances the thesis that human thinking extends beyond the confines of the skull to incorporate tools, technologies, and the built environment. This scholarship defines itself in opposition to the classical view of intellection descending from Descartes, according to which the mind exists prior to mediating technologies and environmental scaffolding and exercises executive function over these subordinates. This essay argues that Francis Bacon and Alexander Pope embrace similarly technical and infrastructural views of human thought, and challenges the tendency to equate distributed cognition with distributed agency. While New Materialism, Actor Network Theory, and other Latour-adjacent projects have challenged historical divisions of subject and object, those versions of distributed agency ignore important distinctions between things and persons and overlook the specifically "second natured" competencies that Bacon and Pope help to see. Long assumed to belong to the classical picture of cognition, Bacon and Pope challenge the long-standing opposition of natural and artificial through an account of "second nature," according to which historically accumulated cultural practices extend from and exist on a continuum with bare human nature, and the material world. By drawing on recent accounts of "second nature" in philosophy of mind and cognitive science, I explain how second nature is "Nature still, but Nature methodized."

**Keywords:** Francis Bacon, Alexander Pope, technology, second nature, distributed cognition, practice, naturalism, normativity

In the seventeenth and early eighteenth century, the line demarcating culture from nature was, in the words of Alexander Pope, "nice." "Twixt that," Pope writes of simple animal nature in his 1733 poem *An Essay on Man*, "and Reason, what a nice barrier; / Forever separate, yet forever near."[1] The joints at which nature was to be carved by emerging disciplinary regimes were not yet obvious, and the boundaries separating ontological from epistemic orders more porous than they would later appear. Distinctions between *scientia* and *phronesis*,

**Dr. Sam Hushagen** researches literature and philosophy from early modernity to Romanticism. His book project, *Formal Prospects: Descriptive Poetics and the Myth of the Given*, considers prospect poetry alongside efforts in philosophy of science and cognitive studies to rethink the "given" in sense experience. His work has appeared in *Milton Quarterly*, *The Wordsworth Circle*, and *The William Carlos Williams Review*. He teaches in the humanities at University of Washington. He would like to thank James Searle, Raquel Velho, Andries Hiskes, Joseph Henderson, Devin Short, and the Tautegory Institute Summer Seminar series, as well as Marshall Brown for their invaluable assistance with this essay.

 

or what philosophers call "knowing-that" and "knowing-how," were similarly thin, as shown by the exchanges between artisans and the emergent category of "natural philosopher."[2] Philosophers and historians have ascribed the genesis of modernity's structuring oppositions—Society and Nature, subject and object, mind and world—to this period, charging that these dichotomies produced irreconcilable images of the world that lead to modern disenchantment.[3]

There is another tradition in early modern thought, however, that emphasizes the continuity of mind and matter—"forever separate, yet forever near"—and the constitution of human understanding through world-involving bodily activity. Rather than rejecting the oppositions of modernity, this countertradition emphasizes how human activity, thought systems, and technological "helps" are simultaneously natural and artificial. In this view, human craftwork—from scientific inquiry to the mechanical arts to poetry—operates at the interface of what Aristotle called "first" and "second nature."[4] In *Nicomachean Ethics*, Aristotle defines second nature as the essential normative dimension of human life, an acquisition of a long process of acculturation that differentiates human beings and the public domain of reasoning from biologically "first nature." Crucially, "second nature" installs a functional distinction from "biophysical" first nature without installing substance dualism.[5] Like Aristotle, Pope saw these complementary and reciprocal sources of human life as different; he did not dissolve those differences in a comprehensive materialism, nor sever them on ontological grounds.

Like Pope, Francis Bacon, writing in the first decades of the seventeenth century, was interested in how social practices and technologies extend natural powers and dispositions. The porousness between nature and culture disclosed by Bacon's and Pope's accounts of *ergon*, or human work-activity, troubles dichotomies taken to define modernity; both authors pose a challenge to an intellectual tradition often assumed to encompass their work. Bacon and Pope underpin an increasingly prominent line of thinking in cognitive studies about the role of the body, artifacts, and the built environment in human understanding. The strength of Bacon's and Pope's positions regarding artifice and nature lies in their ability to think both together without collapsing important qualitative (though not material) differences between them or introducing substance dualism to account for these differences. Their joint criticisms of the segregation of nature from artifactual culture challenge long-standing traditions of Cartesianism and its neurocentrist descendants, as well as "flat" ontologies past and present. A broad philosophical movement invoked by New Materialist and "post-critical" approaches to literature and culture, "flat ontology" denies that specific features of human experience, like intentionality and meaning, are uniquely or definitively human. Instead, proponents of a "flat" or monist ontology invest mind, meaning, and intentional activity in matter itself, dissolving distinctions between human and inhuman by distributing traditionally "human" characteristics across the natural world.[6] Contemporary flat ontology finds precedent in seventeenth- and eighteenth-century monist philosophies from radicals like John Toland and prominent thinkers like Spinoza.

The Aristotelian concept of "second nature" offers a different construction of the relationship between the physical world and the cultural domain of norms and reasons from that which has prevailed from the eighteenth century to the present. Dominant accounts of human reason since Descartes have segregated the mind

from the body and its sustaining environment, while opposing materialist discourses have elided the border between mind and body, subjecting the former to the same causal processes as the rest of nature. In the eighteenth century, vitalist accounts of matter provided one solution to this seemingly irresolvable opposition, but in doing so evacuated distinctively human cognitive capacities by investing them in inanimate matter itself. These unresolved tensions continue to animate cognitive theory and literary studies, motivating competing critical projects and defenses of the humanities in the twenty-first century. This paper argues that "second nature," as developed in Francis Bacon's philosophy of science and Alexander Pope's poetic anthropology, enables a rapprochement between competing accounts of human intellect and culture in the natural world without positing substance dualism or embracing vitalist materialism.

## SECOND NATURE AND ENLIGHTENMENT THOUGHT

Early modern philosophy was broadly committed to recovering a foundation for human thought and experience. Razing the city of philosophy, as Descartes imagines in *Discourse on Method* (1637), was to achieve a fresh start anchored firmly in human first nature: that which is *a priori*, incorrigible, and universal.[7] Descartes's foundationalist project proceeded by negation, subtracting what is added to that original through withering doubt. Thus, historically contingent accretions, like language, technical competencies, and conceptual normativity, were opposed to what Pope, citing Bacon in his comments on "The Design" of *An Essay on Man*, called "man in the abstract" (*EM* 3). Cutting original human nature off from the artificial generates the gap that contemporary ecological and materialist theory attempts to close.[8] Detaching culture from environmental processes construes cultural artifacts and practices as at worst illusory and at best reducible. Recent attempts to rethink the structuring dichotomies of modernity by reassessing the built environment, infrastructure, "things," and the agency of stuff would benefit from the line of thinking that considers artifacts robustly natural while preserving the relative autonomy that distinguishes the social world.[9] Human work activity traverses conventional borders, and its organization in embodied know-how, tools, and historical competencies shows how second nature can provide a vantage from which persons assess the primary forms of biological and cultural organization—tacit knowledge—that go unnoticed. Further, while first nature gives rise to second, second nature supervenes on first through the mediation of cultural practices that have a ratcheting effect on natural capacities.[10] The perch in second nature makes reorganizing first nature possible. In the critical hands of Alexander Pope, literary form reorganizes natural language and normative techniques of sense-making, providing a technology cultivated within second nature to criticize and correct forms of primary organization.

Segregating innate endowments from their historical encrustations was a central project of early modern thought. In "Of Cannibals" (1580), for instance, Michel de Montaigne imagines a state of "original naturalness" to contrast the norms and practices that, in his view, sever European cultures from nature.[11] Quoting Virgil's *Georgics*, Montaigne's description of human "nature at first uprise" counters Western chauvinism by challenging narratives of technological and cultural superiority. For Montaigne, culture displaces rather than advances. In contrast to

governance by concepts and technology, "the laws of nature still rule" Indigenous societies "very little corrupted by ours." Indigenous communities abide in "naturalness … pure and simple," where "there is no sort of traffic, no knowledge of letters, no science of numbers, no name for a magistrate or for political superiority, no custom of servitude, no riches or poverty, no contracts or succession, no partitions, no occupations but leisure ones, no care for any but common kinship, no clothes, no agriculture, no metal, no use of wine or wheat."[12] To construct indigeneity as an uncultured state, Montaigne subtracts the infrastructure of civilization: written language, legal systems, political organization, agriculture, textile production, social hierarchy, and family structure. His primitivizing account erases Indigenous culture as such by dissolving it into life under the sway of "our great and puissant Mother nature."[13] Montaigne removes everything he considers added to humanity's unaccommodated original; tools and practices drag people from "original naturalness" into a degraded world "fashioned … by the human mind."[14]

In this view, the normative acquisitions Aristotle identified with "second nature" displace golden age intimacy with the world and one's community. For Montaigne, acquiring "second nature" adapts one to the historically contingent Idols against which Francis Bacon pitched his experimental philosophy. But unlike Montaigne's idyll of unmediated first nature, Bacon's purgation of the Idols does not signal a retreat to the golden age. Instead, Bacon's message in *The Advancement of Learning* (1605) is the opposite: only by means of technological development and cultural evolution can humans restore "those benedictions from which by his fault he hath been deprived."[15] In the *Novum Organum* (1620), Bacon celebrates cultural scaffolding: "the work is done by tools and assistance, and the intellect needs them as much as the hand. As the hand's tools either prompt or guide its motions, so the mind's tools either prompt or warn the intellect."[16] Far from embracing an empiricism rooted in unmediated experience, Bacon elevates craft traditions and practices of artisanal making, highlighting the necessity of conceptual and material "helps," "organa," and "instrumenta" to human cognition.

Montaigne's readers inherited the unresolved problem of where to place the line between first and second nature, and how to assess the relative priority of one over the other. In contemporary philosophy this is called the "placement problem." As Mario De Caro and David Macarthur ask, "What 'place' can we find for the normative in the natural world? The question becomes urgent if, as seems highly plausible, we suppose that central normative phenomena are not going to be explained away or eliminated."[17] "Normative phenomena" include tacit dimensions of experience and acquired conceptual competencies, as well as simple observations presupposing "ought": when I see an object has certain observable qualities in certain conditions, I assume others ought to perceive the same qualities.[18] All aesthetic judgment bears a normative charge. In this way, perceptual competence emerges with second nature and intersubjective, aperspectival discourse because observation reports depend on the tacit notion of how the world ought to appear to a reasonable person. The fantasy of "unaccommodated man" remained attractive to early modern and Enlightenment thinkers invested in determining what lay beneath the acquisitions of culture, from Hobbes's proto-anthropological account of sovereign power through Rousseau's "Noble Savage" to Kant's transcendental analysis of the *a priori* conditions of human experience.[19] These efforts share the goal of getting to the bottom of human first nature.

"Second nature" involves incorporating—in the full sense of bringing into one's mind and body—practical habits, linguistic and cultural norms, and the embodied know-how of social existence. "Second nature" thus traverses traditionally distinct boundaries between mind and body, subject and object, and individual and culture, challenging the dichotomies that structure Montaigne's primitive utopia.[20] In contrast, Bacon asserts that the human intellect errs if "left to take its own course" unassisted by evolved know-how. Human nature, he counters, must be "guided at every step" by acquired skills and technologies:

> Certainly, if in things mechanical men had set to work with their naked hands, without help or force of instruments, just as in things intellectual they have set to work with little else than the naked forces of the understanding, very small would the matters have been which, even with their best efforts applied in conjunction, they could have attempted or accomplished. (*NO*, "Preface," 28)

For Bacon, "the human intellect … is the source of its own problems" when it "makes no sensible and appropriate use of the very real aids which are within man's power" (*NO* 2). Against the fantasy of unaccommodated man, human inquiry depends on the "aids" and "helps" embodied by *technai*—those historically evolved habits, techniques, tools, and practices that are incorporated by humans as their second nature—that organize and empower human thought and action.

The hypothesis that humans are "artifactual transforms" of biologically first nature has been elaborated from the complementary perspectives of technology studies and the philosophy of distributed cognition.[21] These approaches converge around how norms and practices are embodied in environments and agents through "cognitive niche construction."[22] By emphasizing the dynamic coupling of individual and environment, the distributed hypothesis yields a more expansive understanding of what goes into cognition than traditional neurocentric paradigms by making the conceptual arrays, habits, and practices that Bacon identifies as the *organa* of empirical activity integral to thought itself. One challenge to thinking about cognitive scaffolding is its vanishing. "Second nature" that is not pathological depends on criticism to prevent its tacit forms of organization from hardening into prejudice and rigid presuppositions. The philosopher Axel Honneth writes, "If we grant the naturalness of acculturation, we must also be attuned to the way social practices may also entail the acquisition of malicious or inhumane habits."[23] Honneth argues that criticism must join any claim that acquired norms constitute second nature. Pope's traditionalism sounds elitist, and is easily linked to his conservativism, but it springs from a commitment to the practice of criticism as a complement to "the naturalness of acculturation." Literary form, and particularly the refined technology of the heroic couplet, are Pope's tools for countering the tendency of habits to disappear. While Bacon and Pope are engaged in quite different philosophical projects, Pope extends Bacon's artifactualist account of human knowledge by providing for how literary form can afford a perch to review entrained habits of sensemaking. Behind recent convergences of technology studies and distributed approaches to cognition is Bacon's insistence on the constitutive role of the cultural environment to understanding. For Pope, the reorganizational power of literary form prevents inherited practices of language use from calcifying into bad habits, ideology, and dogma.

## DISTRIBUTED COGNITION AND THE ARTIFACTUAL HYPOTHESIS

The traditional "intellectualist" view of thinking holds that it occurs in the mind or brain, and that human action involves externalizing the will through the body. The body and its implements accordingly "transduce" human intellection by realizing its goals in material substance.[24] Descartes located the site of mind-body transduction in the pineal gland, granting the body status like other objects used for purposes determined by an executive intelligence. For Descartes, the "mental act" is immaterial whereas its putative object or contents are out in the physical world. In this view, as Andy Clark summarizes, "the (non-neural) body is just the sensor and effector system of the brain, and the rest of the world is just the arena in which adaptive problems get posed."[25] This picture of cognition runs into insurmountable problems when trying to account for how what happens *in here* gets *out there*, foundering on the substance dualism it presupposes.[26]

Against the dominant intellectualist view, proponents of an extended, embodied, embedded, and enactive model ("4E") of human intellection contend that "minds are built from world-involving habits" that emerge over time and incorporate structures of the technologically-enhanced cultural environment.[27] As Catherine Legg explains, "theorists of *embodied* cognition view knowledge as located in both mind and body, and theorists of *embedded* and *extended* cognition view knowledge as located in both mind and world. These movements may be understood as 'querying the pure subjectivity of the knowing subject.'"[28] In this account, there is no pre-cultural subject that derives from internal resources, but rather human thought and action emerge through a developmental process that loops in the body, language, operational sequences, and technology.[29] This is what is meant by "artifactual"—human selfhood is an achievement analogous to "a sculpture, or a character in a play, or a spinoff of a technology. But not a fiction."[30] The artifactual account emphasizes practical know-how and "mundane performance" over information processing and symbolic manipulation.[31]

Any account of human cognition must proceed from the role played by kinesthetic and discursive habits and account for the "grooves" in the material world embodied by technologies of human life.[32] Because technology is transparent to use when mastered, it has been neglected so long as propositional knowledge ("knowing-that") is privileged over practical competencies that lack generalizable form ("knowing-how"). The technologically-enriched environment mediates among the human body, cultural norms, and the world to yield a "complex matrix of brain, body, and technology" that "can actually constitute the problem-solving machine that we should properly identify as ourselves."[33] Rather than positing a substantial boundary between what the philosopher Wilfrid Sellars calls the "space of reasons," within which human social life unfolds, and "first nature," theorists of cognitive niche construction emphasize the naturalness of the artificial, and the way the "space of reasons" unfolds in feedback with "the first nature of biophysical matter."[34] These claims emphasize how *homo sapiens* become persons in and through acquired habits and practices from bipedalism and perceptual consciousness to craft traditions, art, and experimental inquiry.[35] Second nature affords a way to account for historically evolved cultural institutions and conventions as continuous

with nature without positing the "flat ontology" that levels meaningful distinctions between purposive, end-seeking behavior and causally governed first nature.[36]

The narrative of modern disenchantment proceeds from the natural to the artificial. This trajectory leads Bruno Latour to conclude that we have never been modern because estrangement from nature is predicated on falsely separating subjects from objects. But where Latour goes wrong is in replacing the original sin of modernity with the distributed agency of flat ontology. Natural and artifactual environments, for Latour, are equally autotelic, doing things to human and nonhuman inhabitants in ways that undermine the narrative of modernity as a fall from nature into artifice. But in flattening distinctions, Latour dissolves differences between concept-mongering, skillful persons and the environments that acquired competencies enable them to exploit. Traditionally, humanists have viewed naturalist approaches to cultural practice as either naive, resurrecting theological notions of the Adamic harmony of ontology and epistemology, or as vulgar physicalism, replacing the rich, *sui generis* character of human life with the push-pull mechanisms of science. Latour's ontological arguments about distributed agency, and their analogs in new materialist and object-oriented ontology, provide an alternative based on the agential structure of objects. But this alternative empties fundamental differences between competent agents and their enabling environments.

Distributed cognition differs from the distributed agency of actor-network theory by affirming the functional role of objects and environments in human thinking while denying agency to matter and things. Latour-inspired distributed agency rejects "the 'Cartesian' dichotomy of subject and object, in which the human subject is perceived as acting upon passive, nonhuman objects," and instead views "the various nonhuman entities with which humans interact as similar sources of agency."[37] Sean Silver equates the "lightly equipped" human actant in a network to a site "where techniques and technologies are made to mesh."[38] "Like the linkages or enchaining of coordinated machines," Silver argues, "the technician comes to see himself as 'analogous;' he recognizes reason as a mechanical process equivalent … to the concatenation of links into a chain."[39] Silver's "analogous" obscures the precise nature of the relationship between technician-actant and the objects in which they are enmeshed. Is the technician a machine among machines, or only *like* the other machines? The analogy requires a cashing out that explains the similarity between these diverse "agents" in the network. Against this view, Alf Hornborg asserts plainly that "artifacts have consequences, not agency."[40] Under prevailing ontological arguments about agency, the now common desegregation of nature and society risks "explaining away rather than properly explicating" functional differences among human practices, inherited environments, and biophysical constraints.[41]

Distributed agency reduces the space of reasons to the space of causes and overlooks the fact that interactions among tools and tool users are asymmetrical. The agency attributed to objects is an acculturated competency in the tool user to exploit affordances of the object and bring about ends towards which tool and user are adapted. Managing those consequences is the accomplishment of a long period of apprenticeship, as anyone learning to drive nails can show. Edwin Hutchins argues that developmental environments ratchet first natural endowments.[42] The routing of mind through the built environment, rather than intrinsic mindedness,

accounts for how first nature "denaturalizes" itself, but without the further ontological claim that those environments are themselves agents.[43] The benefit of a position defending the specificity of "mind and culture in a materialist system," as Jess Keiser points out, is that it can preserve the distinctive functions and qualities of human persons "without lapsing into the strong dualisms of social constructivism or Cartesian substance ontology."[44] Distributed agency, in contrast, reduces everyone within a problem space to "actants" and so misses what is distinctive about persons. The irony, as Kate Soper argues, is that the distribution of agency in posthumanist theory invests humanist notions of intention and purpose in things.[45] The affordances of complex tools and instruments are not "autotelic" but depend on acquired skills. Claiming things "move with their own intentions or actions" is either to assert that objects belong to the space of reasons, or that the space of reasons is itself no different from the domain of necessity.[46]

## FRANCIS BACON'S "HELPS"

Traditionally, historians and philosophers of science have read Bacon through his empiricist reception. The broadly inductivist account given by Thomas Sprat and later interpreters remade Bacon as the founder of classical empiricism.[47] These interpreters ascribed to Bacon a notion of induction according to which, Morris R. Cohen argues, "the scientist begins without any regard for previous thought. Resolved not to anticipate nature, he lets the facts record their own tale."[48] In this view, which Cohen calls "illusory," scientific inquiry starts from a pristine relation to the world given by sense impressions.[49] Bacon's experimentalist program was assimilated to an empiricist ideology predicated on collecting neutral facts at the expense of his more radical claim that scientific data emerge from rather than precede experimental intervention. Bacon insists that even sensory experience needs scaffolding by material and conceptual tools.[50] The inductivist account ignores his claim that "the greatest obstacle and distortion of human understanding comes from the dullness, limitations, and deceptions of the senses" (*NO* 1.50). The thing-itself is only brought into view by virtue of the constitutive constraints and active interventions of research infrastructure.

Against the rebranding of "Baconianism" as unskilled data collection, the "technical" part of Bacon's philosophy emphasizes an apprenticeship in practices of experimentation within the artisanal settings that were his paradigm for experimental inquiry. "Bacon's *factum*," Antonio Perez-Ramos writes, "is not the artefact which man constructs to mirror nature and which is therefore designed to lead to propositional knowledge. Rather, Bacon's *factum* is the technical know-how, theoretically more or less informed."[51] The artisan's workshop, and later the laboratory, embody accumulated know-how. When Bacon writes that the project of his treatise "Preparative Towards a Natural and Experimental History" (1620) is to "examine nature herself, and the arts upon interrogatories," he understands by "arts" what the Greeks called *technai*: practical, evolved methods and technologies that guide human activity.[52] "Art" and "artificial"—first used by Quintilian to translate the Aristotelian term *entechned*, meaning brought about in and through human craft—emerge from intimate, culturally-guided activity with some part of the world.[53] "From the wonders of nature," Bacon explains, "is the nearest intelligence and passage towards the wonders of art; for it's no more but by following

and as it were hounding Nature in her wanderings to be able to lead her afterwards to the same place again" (*AL* 177). The feedback loop between following and leading nature reorganizes inherited social and natural constraints in a process continuously generating the human environment.

"One does not have empire over nature," Bacon contends, "except by obeying her" (*NO* 1.129; 100). Experimental technologies, "do not, like the old, merely exert a gentle guidance over nature's course; they have the power to conquer and subdue her, to shake her to her foundation."[54] The creation of "productive works" yields a second nature invested with the capacity to reorganize biophysical first nature. When Bacon describes his new philosophy as an "Inquiry of causes and the production of Effects," he imbues the apparatus of scientific inquiry with powers continuous with nature itself that can generate hybrid products.[55] Knowing something, he suggests, consists in the practical knowledge of how to bring that thing about. Pamela Smith explains that the "practice (and craft knowledge more generally)" from which Bacon's project evolves "was not just productive, but also investigative and 'philosophical'" since it aimed at understanding causal processes by reproducing them.[56] But that vernacular know-how was not always readily fitted into propositional form since it depended on intimate familiarity with materials and techniques acquired from "experience, working alongside skilled practitioners, observing and imitating."[57] The natural philosopher's practices for generating knowledge constituted a robustly second-natured identity modeled on the blacksmith's or the cartwright's.

Against the claim that the artisan's workshop and the natural philosopher's laboratory represented "an absolute withdrawal from the natural world, a retreat into an entirely artificial, humanly constructed space," by extending nature's causality, experimental technology grasps a part of the world.[58] "The sense by itself," Bacon explains, "is a thing infirm and erring; neither can instruments for enlarging or sharpening the senses do much" (*NO* 1.50; 45). Mere use of technology like microscopes or telescopes to enhance the senses leaves untouched their basic infirmity. Proper experimentation demands enabling constraints that create the conditions for producing facts: "All the truer kind of interpretation of nature is effected by instances and experiments fit and apposite; wherein the sense decides touching the experiment only, and the experiment touching the point in nature and the thing itself" (*NO* 1.50; 45). Experiment stands as an essential interface between the natural philosopher and the "thing itself." Bacon's account is thus constructivist in the sense that experimental facts are human effects, but he does not therefore question the reality of the "point in nature" they simultaneously create and disclose. For Bacon, that a fact is culturally constructed does not render it arbitrary. Rather, experiments are "fit and apposite" in how they exhibit natural processes through human art in ways that enable their exploitation for human ends. Human artistry participates with nature to co-constitute objectivity.

In *The Advancement of Learning*, Bacon argues that the tools and technologies scaffolding human understanding do not "disable the mind, but … stir it up to seek help: for no man, be he never so cunning or practical, can make a straight line or perfect circle by steadiness of hand, which may be easily done by help of a ruler or compass" (*AL* 127). The centrality of "maker's knowledge" to Bacon's science led John Dewey to declare Bacon "the prophet of a pragmatic

conception of knowledge."[59] According to Perez-Ramos, the "maker's knowledge" tradition links Bacon to later accounts of scientific practice that view *phronesis* as genuine knowledge. Bacon redefines knowledge as "recipes for successful action" rather than propositional statements, and his corresponding contribution to the philosophy of science is not the "inductivism" with which he is usually credited but "a new philosophy of technology" that effectively bridges "the products of nature (*naturalia*) and those of human art (*artificialia*)."[60] For Bacon, experimental constraints degrade the boundary between art and nature as they cooperate to produce empirical knowledge. He argues:

> When a man makes the appearance of a rainbow on a wall by the sprinkling of water Nature does the work for him, just as much as when the same effect is produced in the air by a dripping cloud; and, on the other hand, when gold is found pure in sands, Nature does the work for herself just as much as if it were refined by the furnace and human appliance. Sometimes again the ministering is by the law of the universe deported to other animals; for honey, which is done by the industry of the bee, is no less artificial than sugar, which is made by man…. Therefore, as Nature is one and the same, and her power extends through all things, nor does she ever forsake herself, these three things should by all means be set down as alike subordinate only to Nature: namely, the course of Nature; the wandering of Nature; and Art, or Nature with Man to help.[61]

Reliance on human ingenuity does not render the findings of experimentation arbitrary: the challenge is to understand empirical knowledge as a product of technological infrastructure yet still knowledge and still subordinate "only to Nature." Human activity within specially designed spaces generates facts, but since human artistry, and the larger cultural world it constructs, is continuous with the natural world, the difference is merely one of means and efficient cause.

Bacon looked to architecture, hydraulics, and warfare, as well as more specialized fields like astronomy and celestial mechanics, for models of knowledge production. Practical fields held the key to how human creation aligns with natural processes. He writes,

> We willingly place the history of the arts among the species of natural history because there has obtained a now inveterate mode of speaking and [a] notion as if art were something different from Nature, so that things artificial ought to be discriminated from things natural as if wholly and generally different; … whereas, on the contrary, … things artificial do not differ from natural in form or essence.[62]

The microcosm in the laboratory was, in Pope's words, "Nature still, but nature methodized" (*EC* 1.89). Bacon's claims for the "instrumenta" of inquiry go beyond material stuff to include what Joseph Pitt calls the "social technologies" of norms, practices, and the institutions that regulate action within structured environments.[63] The naturalness of institutionalized norms and know-how produce their transparency. A consequence of the naturalization of norms and practices is the tendency of technological mediation to drop below the horizon of scrutiny. The way norms and practices, once mastered, escape awareness occasions Bacon's call for technologically structured inquiry to be joined by rigorous criticism of received know-how. Routines and habits of sensemaking are indispensable, but they can

lead astray. Because human activity is organized by cultural practices and features of the built environment, that organization must be constantly reevaluated. This need accounts for Bacon's severe examination of tradition in conjunction with his productive program of infrastructurally scaffolded inquiry. While second nature is still nature, its historically emergent character requires that it must be continuously scrutinized to not become a set of ossified presuppositions.

## THE TECHNOLOGY OF POPE'S COUPLETS

Bacon's most enduring contribution to the philosophy of science remains his account of how technological aids and practical know-how jointly produce knowledge. For him, inquiry is organized by kinesthetic competencies and their embodiment in environments, tools, and technologies. These constraints are the largely invisible infrastructure of second-natured human activity; the inherited environment eludes conscious attention until something breaks down. In contrast, literary form attends to the organization of sense and experience by the inheritances of language and convention. Poetic form defamiliarizes received practices of language use to open them up to conscious attention. Alva Noë has argued that poems, like other works of art, are "secondary" organized activities charged with attending to the normative and historical construction of experience. Aesthetic form brings "into the open … something that is hidden, implicit, or left in the background" of our everyday activities.[64] In different ways, art illuminates conceptual normativity and habitual "stances" adapted to particular contexts.[65] Pope takes up the Baconian premise that human activity traverses mind/world boundaries, and that cultural systems are simultaneously natural and products of human artistry. But his project is critical: the purpose of art, for Pope, is to disclose how received linguistic practices shape experience so that those traditions can be preserved, modified, or discarded.

Augustine first pointed out the duality of "second nature." Unlike Aristotle, for whom "second nature" secured the ethical perfectibility of humans, Augustine worried that acculturation would reinforce immoderate drives and desires. He perceived "second nature" as a threat because acculturation can reify bad habits.[66] Pope's use of established modes of thought and conventional formal structures (like the couplet, the verse paragraph, and the epistle) exemplify how to inherit cultural know-how while still exhibiting the spontaneity and playfulness that distinguish creativity. But the boldness and invention that Pope praises as the chief virtues of poetry in his preface to *The Iliad* appear lacking in his own verse, a product more of craft than inspiration. In Pope's hands, received modes of writing and thinking are the media for creative composition rather than moribund cultural baggage. Indeed, he approaches poetics as a unique sort of craft knowledge.[67] His poetry accumulates influences and precedents, playing the organizing structures of the couplet and verse paragraph off one another to illuminate his literary system and the norms organizing everyday sense-making. What Fred Parker calls the "skeptical" line in Pope affirms that to be human is to be born into contingent conceptual architecture, foreclosing any pristine, pre-cultural relation to the world.[68] For Pope, literary form subjects received modes of thought and action to scrutiny not for some return to unmediated consciousness, but rather to preserve the aperture between artifacts and changing conditions. If the tendency of second nature is to fade into the background, then poetic craft cultivates attention to received linguistic practices

in a way that opens enlanguaged second nature to criticism. This accounts for the centrality of satire to Pope and his view of poetry as itself a practice of criticism.

Pope's central preoccupation throughout his corpus is the relationship between nature and the products of human art. In his *Epistle to the Right Honorable Richard Earl of Burlington* (1731), for instance, he imagines farmland reabsorbing the Duke of Chandos's highly artificial estate, Cannons: "Another age shall see the golden ear / Imbrown the slope, and nod on the parterre / Deep harvests bury all thy pride has planned, / And laughing Ceres re-assume the land."[69] As William Empson observed, this image combines natural and human qualities, with agriculture taking on aspects of the Biblical flood, and the "golden ear" qualities of aristocratic decorum, nodding "on the parterre."[70] In these lines, cited by Empson as evidence of Pope's equivocations, Pope imagines a georgic balance between the superseded artificiality of Cannons and the hybrid landscape of cultivated farmland. At stake is the balance Pope strives for in his own poetry between the absolutes of natural and artificial. This effort connects Pope's early and late essays to the extended satire of *The Dunciad* (1728), Pope's most acerbic attack on the productions of poets and publishers untutored by tradition. An emphasis on balance between artifice and naturalness, in which the artifice complements and extends the organization already present in the world, links Pope's early and late works.

Pope sees literary form as a technology extensive with naturally occurring patterns and structures, much in the same way as he sees competent landscape design as extending and enhancing features of the environment. In the lengthy discussion of prosody in the second part of *An Essay on Criticism* (1711), Pope writes, "Tis not enough no Harshness gives offense, / The sound must seem an echo to the sense."[71] The smoothness of the couplet is conventionally neoclassical, as is its alignment of form with content. The second line of the couplet divides around a soft medial caesura after "an," arraying operative terms at the beginning and end: the sound, the sense, linked by the doubling verbs "seem" and "echo." Sound and sense are key concepts for the couplet, their similitude suggested by the verbs. Sound is a naturally occurring phenomenon, but sound that carries more than indexical information is cultural.[72] Pope does not claim the two must be identical. In fact, he insists on their separation. In this couplet, Pope articulates a relationship between "artificial" form (shaped, meaningful speech) and natural phenomenon (sound) that identifies the naturalness of both while insisting on their distinction. He does not argue for organic unity but suggests that poetic form exists in the tension between sound and sense, where the goal is not to reduce one to the other, but to sustain friction in a lively interplay of continuity with difference.

The couplet is programmatic for Pope's view of the animating oppositions of art. Tom Jones claims that Pope plays on "a naturalistic sense" of the verb "seem"—like echo, suggesting continuity with difference—"against a highly artificial sense of the word, suggesting that his imitative versification is at once natural, a reflection of the natural order of things, and also the product of skilled human artistry."[73] The balance of "skilled human artistry" with naturalness defines Pope's view of craft. What Pope derides in *An Essay on Criticism*—"Neglect the rules each verbal critic lays / For not to know some trifles, is a praise" (*EC* ll. 2.264–65)—is expanded in *The Dunciad* into a sustained inquiry into the natural origins of aesthetic norms. In this view, a line of dactylic hexameter or blank verse is

no more or less "artificial" than an elaborately patterned couplet: both are products of technical competencies that exploit the affordances of natural language to play cultural meanings and sound patterns off one another. The sequential organization of syllables and sound units—the raw materials of composition—reorganize cultural norms for meaning making in the production of literary form. In a different context, Pope claims that "jarring int'rests of themselves create / Th'according music of a well-mix'd state" (*EM* 2.293–94). Though discussing government by mixed constitution, the central principle that "order springs from a tension of opposing forces" encapsulates the view of form in Pope's philosophical poetry, which itself exploits tensions between formal patterns and philosophical propositions.[74]

Pope's *An Essay on Man* draws on the inquisitive, exploratory mode pioneered by Montaigne to consider the competing determinations of human subjectivity. When Pope asserts that "the proper study of mankind is man" (*EM* 2.2), he seems to dismiss natural science and metaphysical speculation, restricting his inquiry to the space of reasons. But Pope's account of "man" encompasses social practices, language, theology, natural history, and the physical laws from which cultural systems emerge. He uses the balanced form of the couplet and analogical argument to break down oppositions of nature and society. In his introduction he writes, "If I could flatter myself that this Essay has any merit, it is in steering betwixt the extremes of doctrines seemingly opposite" (*EM* 4). His chiasmic declaration "Whatever is, is right" (*EM* 1.294) maps ontology ("whatever is") onto normativity ("is right"), desegregating the domain of cultural artifice from nature.[75] Naturalizing the normative, as Pope attempts here, can be understood as ideology *tout court*: passing off what is historical and contingent as universal and absolute. Like Lucretius, one of his primary interlocutors, Pope envisions a continuity between natural and cultural domains that enables him to move in the poem's four books from corpuscular motion to social organization, but his insistence on a hierarchical scale preempts the dissolution of differences by monist ontology.

*An Essay on Man* opened Pope up to accusations of deism. His association with John Richardson Jr. and Sr., and Henry St. John, Lord Bolingbroke, substantiated the view among critics that he was at best a Deist and at worst a Lucretian materialist. Jean Pierre De Crousaz's influential attack on Pope in *An Examination of Mr. Pope's Essay on Man* (1739) identified him with the same free-thinkers and materialists that Pope himself later singled out for criticism in *The Dunciad*. Whether *An Essay on Man* is Bolingbroke versified—a view attested to in Pope's letters and advanced by Crousaz—or represents Pope's independent attempt at a philosophical system, the poem does not proceed through propositional argumentation.[76] Instead, it works through formal juxtaposition and point/counterpoint. The engine of the poem is the friction from competing accounts of humans in relation to the natural world and the divine. Consistent with his goal to steer "betwixt the extremes of doctrines seemingly opposite," Pope aligns materialist principles that connect humans to nature with dualist views segregating mind from body. Whether Pope ascribes to Bolingbroke's deism or not, the poem carefully resists the tendency in materialist thought to reduce the complexities of human experience to physicalism. At the same time, Pope invokes materialist thinking about the human mind, the passions, and the emergence of culture to preempt the hard dualism of Samuel Clarke, Richard Bentley and the physico-theologians who identified in Newtonian physics a way to preserve mind from determinism.[77]

Pope shares with Bacon and the seventeenth-century philosophical traditions deriving from Descartes and Hobbes the goal of identifying foundations. But his tendency to play opposites off each other shows the interpenetration of innate and acquired human characteristics, making it impossible to cleanly distinguish between the human original and its second nature. To be human, he suggests, is to be second-natured. "Art" provides a middle term that reconciles the contraries of Nature and Society into the harmonious whole envisioned in the *Essay*, yet Pope resists the tendency of Toland and the Richardsons to collapse distinctions and hierarchies into monist ontology.[78] Crediting Bacon as his model, Pope accounts for man "from Nature rising slow to Art" (*EM* 3.169), proceeding from the constraints of human embodiment to epistemological orders and finally to sociability: "Having proposed to write some pieces on Human Life and Manners, such as (to use my Lord Bacon's expression) come home to Man's Business and Bosoms, I thought it more satisfactory to begin with considering Man in the abstract, his nature and his state" (*EM* 4). The practices that "come home to Man's Business and Bosoms" hover between the endowments of first nature and the acquisitions of second: "Plac'd on this isthmus of a middle state, / A being darkly wise, and rudely great: / With too much knowledge for the sceptic side, / With too much weakness for the stoic's pride / He hangs between; in doubt to act, or not / In doubt to deem himself a God or Beast; / In doubt his Mind or Body to prefer / Born but to die, and reasoning but to err" (*EM* 2.3–10). The "middle state" of human existence is defined by balancing extremes and reconciling discordant influences. Pope contends that humans are as much body as they are mind, in equal parts brutish and divine. The art in human life consists in hanging between these seemingly irreconcilable opposites—an art formalized by Pope in the balanced equations of his couplets.

In the celebrated opening of Epistle II, Pope revisits the critique of pride that concludes Epistle I, repudiating accounts of man's natural origins as degrading. The competing sources of selfhood organized by the couplets could yield "chaos of thought and Passion / all confus'd," an inertial state rather than a productive difference. To prevent that outcome, Pope approaches natural constraints the same way he does formal ones: namely, as enabling conditions. Their friction is the source of human activity, not its antagonist. Pope here expresses the eighteenth-century view that inherited cultural practices, studied with serious and dedicated attention, enable rather than impede agency, in the same way that natural laws make possible formal organization. The array of oppositional terms—Knowledge or Skepticism, Weakness or Stoicism, God or Beast, Mind or Body—around the caesura embodies the condition of "hanging between." Pope's skepticism towards absolutist positions prevents him from privileging one or another of the contraries that occupy the ends of each couplet. Playing opposites off one another, he rejects metaphysical claims that insist on a bestial natural order and a separate spiritual one. Pope also declines to embrace the comprehensive materialism of his deist friends. Instead, he "hangs between," defining human existence as emerging from distinct but reciprocally related contraries.

## POPE'S POETIC ANTHROPOLOGY

Because humans live within the historical process of enculturation, inquiry into pre-cultural subjectivity will always be conjectural. To imagine the emergence

of culture, *An Essay on Man* draws on Plutarch's account of manners as "a certain qualitie imprinted by long contrivance of time in that part of the soule which of itselfe is unreasonable."[79] Pope retains Plutarch's distinction between cultural acquisitions "by long contrivance" and "that part of the soule which is itself unreasonable," associating the latter with the passions. Manners become habitual practices, remaining in the background alongside bodily competencies, and thus "natural," while at the same time being "contrivances." In a kind of poetic anthropology, Pope's history of how "contrivance" becomes natural narrates how "Man's superior part / Uncheck'd may rise, and climb from art to art" (*EM* 2.39–40). These lines follow his criticism of Newtonian metaphysics. Pope does not reject Newton's science, but rather the identification of nature with a push-pull world of mechanical stuff and a spiritual realm coexisting alongside it. In a sequence of questions, he asks whether "he, whose rules the rapid comet bind" (*EM* 2.36), could account for his own rationality, or whether human reason should be taken as given, a mysterious quality of an immaterial soul exempted from empirical analysis. For Pope, answers that posit the independence of the human mind do not suffice because they assume what needs explaining: while the astronomer may bind the comet with celestial mechanics, "Could he … / Describe or fix one movement of his mind?" (*EM* 2.36–37). Pope maintains the line separating causal law from human reasoning, but his story suggests the latter emerges from the former, and that acquired habits take their place among the furniture of natural life. The challenge is whether Pope can maintain his commitment to linking humanity with the rest of creation without destroying what makes humans distinct.

The gradual ascent "from art to art" departs from typical accounts of cultural evolution by rejecting a pristine origin. The first emergence of art is coterminous with "human," and art builds on art by exploiting past accomplishments in an aggregative form of cultural evolution. Though human reason is capable of extraordinary ascent, it undoes itself when it neglects its circumstances and enabling conditions. As in Bacon, the effort to "trace science" (*EM* 2.43) must be attended by assiduous criticism: "First strip off all her equipage of pride, / Deduct what is but Vanity, or Dress" (*EM* 2.44–45). Humility, Pope intones, is learned through the long labor of subordinating oneself to the inheritances of a cultural practice. The physical world, received language, and traditions are recalcitrant: they humble their user, who is responsible to their constraints. Pride deceives by assuming independence from these enabling conditions. Pope identifies "Reason" as the faculty responsible for attending to the tacit organization of experience and imbues it with the capacity to assess what "serv'd the past," and to determine what "must the times to come!" (*EM* 2.51–52). Reason sifts art from within art to identify new possibilities. Formal constraints shape the "mighty maze" of the inherited environment, identifying what belongs to the "wild, where weeds and flow'rs promiscuous shoot" and what to the "garden, tempting with forbidden fruit" (*EM* 1.7–8). This couplet hinges at a contrastive "or," but the equivocations within each line give it an aggregative lean. Uncultured nature exhibits both cultivated products and weeds promiscuously mixed, while the "Garden" is similarly heterogeneous, admitting undomesticated temptations, recalling the hybrid landscapes of the *Epistle to Bolingbroke*. The cross-pollination here endeavors to reconcile reason and law, the walled garden and the wild, to account for the emergence of norms from nature.

Pope's initial program for describing the emergence of human art proceeds by negation, with the goal of situating human artifice within the natural world. At the beginning of Epistle I, Pope interrogates the great chain of being while questioning presumptions to comprehend the whole. As A. D. Nuttall points out, the *Essay* denounces in the same breath that it pursues comprehensive understanding to provide cover for its ambitious investigations of God and nature.[80] If the natural and the human world exist along a continuum, then what does this entail for the human relationship to the divine? Is that, too, along a continuum, as the great chain implies? Pope urges caution: "But of this frame, the bearings and the ties," Pope asks, "The strong connections, nice dependencies, / Gradations just, has thy pervading soul / Look'd through? Or can a part contain the whole?" (*EM* 1.29–32). Throughout the poem, Pope is invested in lines of demarcation. His metaphors equivocate between forms of biological and mechanical organization. Here he challenges microcosm/macrocosm analogies and satirizes the presumption that Newtonian science could grasp the comprehensive order of the universe. At the same time, Pope suggests reciprocity between systems and subsystems. "Frame" thus operates in two senses: that of the limited human "frame" of the investigator, and the larger "Frame" of nature to which the human is uncertainly related. Pope questions whether the human "frame" can "contain" the natural totality of which it is a part. Doing so presupposes "strong connections" between art and nature, according to which the former emerges from the latter by "gradations just." His question can be rephrased as whether one can make justifiable inferences about nature by inquiring into the human lifeworld, or whether epistemology can capture ontology. Order and regularity are not mere projections—a consequence of the "bearings and ties" of "this frame"—but index regularities in the natural world that engenders them.

Pope's attempt to account for human psychology and derive social and historical principles from it revises anthropocentric views of humans relative to the universe. Pride gives humans the sense of being "principal alone" (*EM* 1.57) in the world as its end and purpose: "Ask for what end the heav'nly bodies shine, / Earth for whose use? Pride answers, 'Tis for mine" (*EM* 1.131–33). As Pope's critique develops, pride indexes the tendency to elevate human intelligence above its enabling conditions. Against this Ptolemaic humanism, Pope imagines that humans derive from the same processes that govern material reality: "ALL subsists by elemental strife," he loudly pronounces, "The gen'ral ORDER since the whole began, / Is kept in Nature, and is kept in Man" (*EM* 1.169; 171–72). These lines occur in the context of an analysis of "strength of mind" that emphasizes the importance of biological drives that need socialization. "The passions are the elements of life" (*EM* 1.170), he writes, by which he understands that desire connects humans to the natural world. Here, reason and nature are continuous with one another, both exhibiting principles of "gen'ral ORDER" that traverse conventionally distinct domains. Once again, tension is an engine: "elemental strife" yields "gen'ral order." The analogy of micro- to macrocosm previously disavowed recurs here in Pope's defense of the harmony encompassing natural and human orders.

The impulse to derive order from elemental strife leads Pope to tarry with vitalism.[81] To account for continuity he invests matter with life: "See, thro' this air, this ocean, and this earth / All matter quick, and bursting into birth. / Above, how

high progressive life may go! / Around how wide! How deep extend below!" (*EM* 1.233–36). Pope's vision of universal striving subverts the barrier between mind and world (and threatens the divide between human and divine). But the nicety of the border separating natural law and the normative threatens bullying of the latter by physical causality. What he later refers to as "Plastic Nature" suffuses all creation, so that products of human ingenuity embody the formative drive imbuing matter. But he carefully preserves the hierarchy of the great chain. Pope uses the metaphor of the graft to describe this relationship. Grafts can only be made like to like, but root and branch remain distinct: "Th'eternal art, educing good from ill / Grafts on this passion our best principle; / Tis thus the mercury of man is fix'd / Strong grows the virtue with his nature mix'd (*EM* 1.175–78). Second nature emerges from first (and, as *The Dunciad* warns, can collapse back into it), but these conditions are arrayed along a vertical axis that introduces functional differences without positing a spiritual substance responsible for virtue. "All Nature is but art" (*EM* 1.289), he claims at the end of the first verse epistle, announcing the premise that the following three elaborate.

Pope thinks with his couplets. As the four sections of the poem unfold, they parse the "isthmus of a middle state" into its antinomies, developing a naturalist account of minds that accommodates autonomy and freedom without severing them from natural origins. The problem Pope identifies is recognizing the role environmental constraints play in intelligence without thereby making the environment an agent, or ceding reason to determinism. Pope's "middle state" tries to do justice to the historical determinations of human activity by examining how human agency materializes in practical traditions for sense-making. He charges the flights of "Reason," which "soar with Plato to th'empyreal sphere," with "quitting sense" (*EM* 2.26), to distinguish them from the knowledge that "Attention, habit and experience gains" (*EM* 2.79). "Nature" creates human life, Pope writes, but "Habit its nurse" (*EM* 2.145) ushers the individual to maturity: "The dross cements what else were too refin'd, / And in one interest body acts with mind" (*EM* 1.175–80). The metaphor of "cement" here could lend support to the spirit-matter dichotomy, according to which the spirit holds together the "elemental strife" of atoms. Except Pope inverts the usual hierarchy so that the bodily "dross" is responsible for holding reason together. In the unfolding couplets, "our best principle," which Pope identifies with mutual attraction and "the chain of Love, / Combining all below and all above" (*EM* 3.7–8)—a force he derives from elemental tendencies of atoms—exists in and as embodiment, without which it would be withdrawn from human activity into a Platonic world "too refin'd" for efficacy. "See Plastic Nature working to this end," he writes, "The single Atoms to each other tend / Attract, attracted to, the next in place / Form'd and impell'd its neighbor to embrace" (*EM* 3.9–12). Mutual attraction secures the integrity of the corporeal body and by analogy "cements" the cultural one through shared goal-seeking, which is the social "Virtue" growing from the coordination of first with second nature.

The reciprocal dependencies of corpuscle and continuum provide an ontological justification for Pope's derivation of artifice from nature. In the third essay he explains how rational self-interest, which he refers to as "Self-Love," becomes cultured, so that a collective "we" regulates the actions of individuals. Reason, in this view, is public and normative. It is not a perversion of "honest Instinct"

(*EM* 3.88)—aligned with bodily drives—but its completion. Becoming a person is learning to hold one's own reasoning up for aperspectival evaluation. Unlike bare instinct, human selfhood is achieved by acquiring a socially calibrated perspective. But for Pope, this cultural construction does not mark selfhood as unnatural since cultural organization also proceeds from "the first eternal ORDER." The long process of "Nature rising slow to Art!" naturalizes cultural capacities and competencies by casting practical knowledge as a sophisticated transformation of what "mere instinct could afford" (*EM* 3.197). A long passage in the third essay on natural instruction repeats the imperative "Learn from," and derives forms of human cooperative action from "the bee," "the mole," "the worm," and even "the little nautilus" (*EM* 3.172–78). Pope's chain links "the green myriads in the peopled grass" (*EM* 1.210) to the most elaborate social architecture of human life. From cooperative goal-seeking in the natural world, everything scales up: "Here too all forms of social union find, / And hence let Reason, late, instruct Mankind" (*EM* 3.180). Here, reason is the normative capacity to evaluate judgment relative to collective standards, which Pope presents as arriving "late," an emergent property of "mere Instinct." Pope tasks reason with learning from the past to guide the self-correcting enterprise of human development.

Pope sees the history of human reason as a succession of experiments, trials, and errors gradually picking out what works from what does not and passing those discoveries along in the form of techniques, tools, and social practices. This kind of reasoning is an effect of pervasive—not exclusively human—forms of cooperation: "Learn each small People's genius, policies, / The ant's republic, and the realm of Bees; / How those in common all their wealth bestow" (*EM* 3.183–85).[82] Human culture evolves tendencies towards cooperation that are nonhuman. But should the relationship between the "green myriads" and human forms of life be construed as a mirror across an unbridgeable divide, or does human culture ratchet capacities observable in "the bee" or the "little nautilus" to novel complexity? While Pope's conjectural anthropology derives cooperation and mutual benefit from laws that suffuse physical and cultural spheres, he again strives for balance without erasing the unmistakable differences that define human social organization, or nautical technology, as emergent yet irreducible.

*An Essay on Man* attempts a natural history of culture and extends Pope's effort in the *Essay on Criticism* to account for the historical determination of norms while defending their universality. The tension in both long poems is between recognizing the changing and historical character of social existence while defending the "artificial" as real and binding. Taste and judgment tend to be idiosyncratic: "'Tis with our judgments as our watches, none / Go just alike, yet each believes his own" (*EC* 1.9–10). But at the same time, they are natural faculties that "alike from Heaven derive their light" (*EC* 1.13). Pope sees norms of judgment as "Those rules of old, discovered not devised" (*EC* 1.88). The aesthetic exemplifies how ostensibly artificial and historically constructed norms of judgment "Are Nature still, but Nature methodized" (*EC* 1.89). This early account from *An Essay on Criticism* anticipates the later view in *An Essay on Man* of social practices evolving natural and ancestral modes of attraction and cooperation. The view that norms are both natural and cultural is conventional in eighteenth-century aesthetics, but Pope lends it a unique cast by attempting, in the balanced structure of his couplets,

to reconcile the universality of aesthetic judgment with historical change—an effort whose failure accounts for the bitterness of *The Dunciad*. "First follow Nature," Pope advises, "and your judgment frame / By her just standard, which is still the same. / Unerring Nature, still divinely bright / One clear, unchanged, and universal light; / Life, force, and beauty to all impart / At once the source, and end, and test of art" (*EC* 1.68–73). The repetition of "still" here affirms the transhistorical character of judgment framed by "Nature's standard," but the second "still," echoed in "unchanged," suggests a static view of nature at odds with Pope's insistence on dynamism. The couplet stages the fundamental question that Pope's essays jointly pose: Can conventions—social, literary—be both natural and historical?

The difficulty posed by both essays is to reconcile the historical with the natural. Both texts show Pope rejecting archaism and nostalgia while also leaning into traditionalism and classicism. *An Essay on Criticism* mocks attempts to recreate outmoded styles and forms, suggesting that taste and its leading principles change. But Pope also identifies those principles with laws of nature: "Learn here for ancient rules a just esteem, / To copy Nature is to copy them" (*EC* 2.139–40). Rules governing artistic composition are universal. Pope's classicism highlights resources found in the past for the present practice of poetry. This is what it means to defend custom, as Pope does, as natural: practical know-how sustains worldly activity; humans cannot do without it. Longstanding accounts of human artistry presume that the artificial is historical and therefore unnatural. But, as Lorraine Daston has countered, "'If historical, then relative' is a *non sequitur*."[83] In both *Essays*, as in *The Dunciad*, Pope's couplets assess the normative in relation to the necessary. The propositional content of the poems tries to reconcile the diverse determinations of selfhood without reducing one to another. The intermediate position between naturalism and historical constructivism is occupied by what Pope calls "sense": a middle ground between universal forms of receptivity ("Common sense") and the "modest caution" of cultivated "good sense." Pope's use of the couplet formalizes the process of inheriting conventional linguistic systems and ways of organizing material. By doing so, the verse form itself offers a technology for arraying and scrutinizing the structures that order everyday life within language, from conventional speech patterns to the largely invisible conceptual architecture by which nature is carved.

The normative habits and practices embodied in craft traditions, whether husbandry or poetry, can get one stuck in the mud at times, but at other times can be cultural treasures that guide effective action. The "Essay on Education" in *The Dunciad* IV treats traditions of practice as the courtrooms wherein determinations of better and worse at the level of the syllable, couplet, and verse paragraph are made. The accumulated *technai* of poetic composition, rather than the individual predilections of the critic, equip the jury for judgments of taste, which for Pope, anticipating Kant, always imply *ought*. A poem stands or falls in relation to normative assessment rather than on the privative perspective of "The critic Eye, that microscope of Wit."[84] In the apocalyptic conclusion, Pope presents the coming of the Kingdom of Dulness and consequent annihilation of "Order and Science" as a process of deculturation to an undifferentiated, unreasonable first nature. Like Augustine, Pope perceives how bad habits and bad writing can induce degeneration. Whereas the *Essay on Man* describes how "man's superior part / uncheck'd may

rise from art to art," *The Dunciad* ends with "art after art" flickering out, starting from the "gilded clouds" of fancy, and the "momentary fires" of "Wit / … As one by one, at dread Medea's strain, / The sick'ning stars fade off th'ethereal plain; / As Argus' eyes by Hermes' wand opprest, / Clos'd one by one to everlasting rest."[85] These lines about Argus Panoptes (Greek for all-seeing) signal the specifically literary dimensions of what is eclipsed by Dulness. Pope has in mind Medea's invocation of "sightless chaos and the shadowy home of dark-enshrouded Dis."[86] In Seneca's version, Medea's soliloquy calls on the stars to stop shining and the natural progress of day and night to cease so she can perform her bloody work. In Ovid's version of the Argus myth, Hermes' appears as a shepherd-singer and pipes a "new sound" that coaxes Argus's hundred eyes to sleep before chopping off his head. In Pope's distillation, dimming stars and closing eyes precede the subsequent eclipse of truth, philosophy, physics, metaphysics, religion, and, ultimately, human morality until "Universal darkness buries All" at the poem's catastrophic conclusion.[87]

Throughout *The Dunciad*, "art" is treated as the natural medium for intersubjective human existence. In the simile of Argus's eyes, it is equated to the guiding lights of the stars and the awareness of vision that are sunk in Dulness. David Hauser points out how much early-modern commentary allegorizes Argus's all-seeing eyes as the stars and treats Argus himself as a figure for circumspection. In those readings of the myth, the story shows how "the most vigilant and prudent men are oftentimes mastered by an eloquent and cunning tongue."[88] Just as the simile aligns the stars, Argus's eyes, and art, it also gathers among the "arts of sinking" the charm of Medea and the song of Hermes. The duality of art, its ability to educe sociability or to delude rationality, is raised here by situating the artistic products of Medea and Hermes as instances of Dulness begotten by the output of popular poets, metaphysicians, and grub street publishers. Such inversions and dualities go to the heart of Pope's poetic technique across his corpus.

The interplay of similarity and difference among the classical allusions in the simile typifies Pope's literary-historical approach to composition. His method of recontextualization shows how poets build with old bricks. As with his satirical remaking of Anchises' prophecy from *Aeneid* VI to foretell the empire of Dulness, Pope's careful interlocking of Seneca and Ovid—themselves rewriting Hesiod and Euripides—in a sequence of parallel couplets demonstrates formally the way competent artisans make use of the know-how embodied in a tradition, incorporating that tradition as a blacksmith incorporates his craft. In the Argus myth, Hermes is the protagonist liberating Io. But Pope reverses this relationship, making the simile a potent form of *oppositio in imitando*, a method he frequently uses to engage the literary past while still exercising the boldness and invention he claims for good poetry. Like criticism, writing involves entering a literary tradition to occupy it fully, exploiting its opportunities while demonstrating its limitations from within. For Pope, inheriting a tradition does not entail passivity, but equips the user to act effectively within the domain marked out by that tradition. The centrality of criticism to Pope's poetic practice shows the extent to which cultural inheritances can be tools sharpened by that same tradition rather than the meek exemplification of received dogma.

## CONCLUSION

Becoming a human person is an accomplishment, achieved by accommodating a vast matrix of material constraints and cultural norms. These ubiquitous, mundane structures, practical sequences, and habitual stances transcend the nature/society dichotomy and represent the results of generations of environmental- and self-engineering by human communities. The built environment stores our labor, as well as stabilizes our patterns and silently reproduces them through time. Accordingly, these tacit and physical structures by which human selves are accomplished disappear, only to become glaringly visible when something goes wrong. Literary form offers critical technology for attending to the reciprocal organization of humans and their environments. What Sellars called the "logical space of reasons, of justifying and being able to justify what one says," is itself a cultural transform of human first nature that depends on cultural technologies like natural language to calibrate perspectives and coordinate goal-oriented activity.[89] Literary form provides a vantage on the logical space of reasons by generating tools for attending to how inherited language organizes mundane activity and intersubjective existence.

For a generation of critics, second nature was politically reactionary, and defending habit as "natural" was ideological to its core. Edmund Burke gave a conservative cast to "second nature," writing that "Man in his moral nature becomes in his progress through life a creature of prejudice—a creature of opinions—a creature of habits, and of sentiments growing out of them. These form our second nature as inhabitants of the country and members of the society in which providence has placed us."[90] Burke's chauvinism tainted the idea of second nature for critics committed to the emancipatory ethos of Romanticism, but as present-day ecological catastrophe and anti-science have added urgency to understanding the entanglements of nature and culture, second nature can reconcile the constraints of naturalism with the ineradicably normative dimension of experience. Pope is distinguished from Burke by his refusal to grant unassailable authority to historically accumulated cultural competencies. In his hands, the philosophical poem becomes a tool to scrutinize the invisible architecture of habits and "sentiments growing out of them."

Omri Moses has recently argued that "the poem is a way of reorganizing a technology, such as writing, from within that technology."[91] Pushing this claim further, distributed cognition argues that distinctly human capacities for engaging the world and reflecting on that engagement emerge with natural language. As a technology for reflecting on those primary forms, poetry not only reorganizes the technology of writing but directs attention to the architecture of language-based understanding. Scholars of literature can offer theorists of cognitive niche construction an account of how literary form provides a technology for bringing to conscious attention the tacit organization of experience by the linguistically structured environment. Literature enables scrutiny of the organization of bodies and space and meanings that circulate in the built environment, but not with the goal of returning to Montaigne's golden age idyll. As reflexive technology, the mediations of literary form do not yield immediacy so much as they enable acknowledgment of, and intervention in, the normative architecture of human life.

NOTES

1. Alexander Pope, *An Essay on Man*, ed. Tom Jones (Princeton: Princeton Univ. Press, 2018), 1.223–24. Future references to *An Essay on Man*, abbreviated as *EM*, will be parenthetical and include section and verse number.

2. On "knowing-how" and "knowing-that," see Gilbert Ryle, "Knowing-How and Knowing-That," *Proceedings of the Aristotelian Society* 46 (1946): 1–16; and Ryle, *The Concept of Mind* (Chicago: Univ. of Chicago Press, 1949), 25–61. On *scientia* and *phronesis* in early-modern artisanal practice, see Pamela Smith, "Historians in the Laboratory: Reconstruction of Renaissance Art and Technology in the Making and Knowing Project," *Art History* 39, no. 2 (2016): 210–33.

3. Bruno Latour follows A. N. Whitehead's account of the myriad dichotomies born of severing mind from matter in *We Have Never Been Modern* (Cambridge: Harvard Univ. Press, 1993), 79–82. See Whitehead, *Science and the Modern World* (New York: The Free Press, 1925), 1–19. On the estrangement of subject and object in the "elegiac mode" of scientific history, see Lorraine Daston, "History of Science in an Elegiac Mode: E. A. Burtt's Metaphysical Foundations of Modern Physical Science," *Isis* 82, no. 3 (1991): 522–31. On the "two images of man in the world," see Wilfrid Sellars, "Philosophy and the Scientific Image of Man," in *Science, Perception, and Reality*, ed. Robert Colodny (Atascadero, CA: Ridgeview Publishing, 1963), 35–78. On the centrality of eighteenth-century philosophy to Sellars's analysis of the "scientific" and the "manifest" images, see Jess Keiser, "Introduction," *Nervous Fictions: Literary Form and the Enlightenment Origins of Neuroscience* (Charlottesville: Univ. of Virginia Press, 2020), 7–38.

4. On "second nature" as the domain of normatively structured social life, see John McDowell, *Mind and World* (Cambridge: Harvard Univ. Press, 1997), 84. For Aristotle's account, see *Nicomachean Ethics* VII.

5. Jess Keiser uses the term "biophysical" to demarcate the domain of chemistry, physics, and biology from "second nature" in "Plastic Matters," in *The New Politics of Materialism: History, Science, Philosophy*, ed. Sarah Ellenzweig and John H. Zammito (New York: Routledge, 2017), 66–87; 68. Wilfrid Sellars characterizes "second nature" as the "Normative space of reasons" in which humans play "the game of giving and asking for reasons … of justifying and being able to justify what one says." See Sellars, *Empiricism and the Philosophy of Mind* (Cambridge: Harvard Univ. Press, 1997), 35.

6. For a primer on flat ontology, see Graham Harmon, *Object Oriented Ontology: A New Theory of Everything* (New York: Penguin Random House, 2018). For a critical perspective, see Ray Brassier, "Concepts and Objects," in *The Speculative Turn: Continental Materialism and Realism*, ed. Levi Bryant, Nick Srnicek, and Graham Harman (New York: Re.Press, 2011), 47–65. For the reception of flat ontology in literary and cultural studies, see Rita Felski, *The Limits of Critique* (Chicago: Univ. of Chicago Press, 2015).

7. René Descartes, "Discourse on Method," in *The Rationalists: Descartes: Discourse on Method and Meditations; Spinoza: Ethics; Leibniz: Monadology and Discourse on Metaphysics* (New York: Doubleday, 1974), 39–98.

8. For an overview of this gap, and the various materialisms that have tried to close it, see Sarah Ellenzweig and John Zammito, "New Materialism: Looking Forward, Looking Back," in Ellenzwig and Zammito, eds., *The New Politics of Materialism*, 1–15.

9. On the infrastructural turn in recent humanist scholarship, see Christopher Breu and Jeffrey Di Leo, "Introduction: Theorizing Infrastructure," *Symploke* 31, nos. 1–2 (2023): 1–8.

10. On "supervenience" without mystified accounts of "spirit" or physicalist reduction, see Eleonore Stump, "Emergence, Causal Powers, and Aristotelian Metaphysics," in *Powers and Capacities in Philosophy: The New Aristotelianism*, ed. Ruth Groff and John Greco (New York: Routledge, 2013), 48–68.

11. Michel de Montaigne, *The Complete Essays of Montaigne*, ed. and trans. Donald Frame (Palo Alto: Stanford Univ. Press, 1958), 153.

12. Montaigne, *Essays*, 153.

13. Montaigne, *Essays*, 153.

14. Montaigne, *Essays*, 153.

15. See Francis Bacon, "The Advancement of Learning," in *Francis Bacon: Major Works*, ed. Brian Vickers (Oxford: Oxford Univ. Press, 2002), 120–300; 231. Hereby abbreviated and cited in text as *AL*.

16. Francis Bacon, *New Organon*, ed. Lisa Jardine and Michael Silverthorne (Cambridge: Cambridge Univ. Press, 2000), 1.2; 33. Hereby abbreviated and cited in text as *NO*, with section and aphorism number provided.

17. See Mario De Caro and David Macarthur, "Science, Naturalism, and the Problem of Normativity," in *Naturalism and Normativity*, ed. Mario De Caro and David Macarthur (New York: Columbia Univ. Press, 2010), 3.

18. On the normative character of sense reports, see Sellars, *Empiricism*, 32–46.

19. On foundationalism, see Sellars, *Empiricism*, 15. On Rousseau, see James Chandler, *Wordsworth's Second Nature* (Chicago: Univ. of Chicago Press, 1984), 62–74.

20. See Jenny C. Man, "Pygmalion's Wax: 'Fruitful Knowledge' in Bacon and Montaigne," *Journal of Medieval and Early Modern Studies* 45, no. 2 (2015): 367–93; and William Hamlin, "Florio's Montaigne and the Tyranny of 'Custome': Appropriation, Ideology, and Early English Readership of the *Essayes*," *Renaissance Quarterly* 63, no. 2 (2010): 491–544. On Gonzalo's "commonwealth" discourse in *The Tempest* (2.1.147–54), see Fred Parker, "Shakespeare's Argument with Montaigne," *The Cambridge Quarterly* 28, no. 1 (1999): 3–4.

21. The term "artifactual transforms" is from Joseph Margolis, *Towards a Metaphysics of Culture* (New York: Routledge, 2016), 13.

22. See Andy Clark, "Language, Embodiment, and the Cognitive Niche," *Trends in Cognitive Science* 10, no. 8 (2006): 370–74. On "conceptual normativity" as a "distinctively human form of niche construction," see Joseph Rouse, "Toward a New Naturalism: Niche Construction, Conceptual Normativity, and Scientific Practice," in *Naturalism and Normativity in the Philosophy of the Social Sciences*, ed. Mark Risjord (New York: Routledge, 2015), 28–42; 29. For an overview of the "niche constructive" view of social practices, see Rouse, *Social Practices as Biological Niche Construction* (Chicago: Univ. of Chicago Press, 2023), 1–24.

23. Axel Honneth, "Second Nature: The Profound Depths of a Key Philosophical Concept," in *Naturalism and Social Philosophy*, ed. Martin Hartmann and Arvi Särkelä (New York: Rowman and Littlefield, 2023), 30.

24. On "Transduction," see John Haugeland, "Mind Embodied and Embedded," in *Having Thought: Essays in the Metaphysics of Mind* (Cambridge: Harvard Univ. Press, 1998), 207–40.

25. Andy Clark, *Supersizing the Mind: Embodiment, Action, and Cognitive Extension* (New York: Oxford Univ. Press, 2008), xxvii.

26. See Alva Noë, *Varieties of Presence* (Cambridge: Harvard Univ. Press, 2012), 4.

27. Catherine Legg, "Discursive Habits: A Representationalist Re-reading of Teleosemiotics," *Synthese* 5–6 (2021): 14751.

28. Legg, "Discursive Habits," 14753.

29. "Operational sequence" translates Leroi-Gourhan's influential notion of "*chaîne operatoire*": "Techniques are at the same time gestures and tools, organized in sequence by a true syntax which gives the operational series both their stability and their flexibility." See Andre Leroi-Gourhan, *Gesture and Speech* (Cambridge: MIT Press, 1993), 114. On the notion of "operational sequence" in connection with craft knowledge and poetics, see Gary Tomlinson, *A Million Years of Music: The Emergence of Human Modernity* (New York: Zone Books, 2015), 63–65.

30. Margolis, *Towards a Metaphysics of Culture*, 1.

31. On "mundane performance" and truth claims, see Haugeland, "Truth and Rule Following," in *Having Thought*, 306–62.

32. See Henry Staten, *Techne Theory: A New Language for Art* (New York: Bloomsbury, 2019), 11.

33. Clark, *Supersizing the Mind*, 27.

34. Keiser, "Plastic Matters," 68. John McDowell writes, "Nature includes second nature. Human beings acquire a second nature in part by being initiated into conceptual capacities whose interrelations belong to the logical space of reasons." See McDowell, *Mind and World* (Cambridge: Harvard Univ. Press, 1994), xx. He later elaborated on this claim: "What is natural need not be equated with what is explicable by natural sciences. Second nature is nature too. Having our sensory consciousness shaped by conceptual capacities belongs to our second nature." See McDowell, *Having the World in View: Essays on Kant, Hegel, and Sellars* (Cambridge: Harvard Univ. Press, 2009), 186.

35. On how the built environment materializes cultural practices, see David Stern, "The Practical Turn," in *The Blackwell Guide to the Philosophy of Social Science*, ed. Stephen P. Turner and Paul A. Roth (Malden: Blackwell, 2003), 185–206; Joseph Rouse "Practice Theory," in *Philosophy of Anthropology and Sociology*, ed. Stephen P. Turner and Mark Risjord (Boston: Elsevier, 2007), 639–81; and Rouse, *Articulating the World: Conceptual Understanding and the Scientific Image* (Chicago: Chicago Univ. Press 2015), 201–221.

36. On the distribution of agency under "flat ontology" and Latour's actor network theory, see Alf Hornborg, "Subjects vs. Objects: Artifacts Have Consequences, Not Agency," in *Nature, Society, and Justice in the Anthropocene: Unraveling the Money-Energy-Technology Complex* (Cambridge: Cambridge Univ. Press, 2019), 177–92.

37. Hornborg, "Subjects vs. Objects," 177.

38. Sean Silver, "Hooke, Latour, and the History of Extended Cognition," *The Eighteenth Century* 57, no. 2 (2016): 208.

39. Silver, "Hooke and Latour," 211.

40. Hornborg, "Subjects vs. Objects," 177.

41. Keiser, "Plastic Matters," 68.

42. See Edwin Hutchins, "The Role of Cultural Practices in the Emergence of Modern Human Intelligence," *Philosophical Transactions of the Royal Society* 363 (2008): 2011–19.

43. Keiser, "Plastic Matters," 68.

44. Keiser, "Plastic Matters," 69.

45. See Kate Soper, "The Humanism in Posthumanism," *Comparative Critical Studies* 9, no. 3 (2012): 365–78.

46. Christina Lupton, Sean Silver, and Adam Sneed, "Introduction: Latour and Eighteenth Century Studies," *The Eighteenth Century* 57, no. 2 (2016): 8.

47. Sprat equates "experimenting" with the "scrupulous and severe examination of particulars," construing experimentation as data collection rather than intervention in nature through imposing artifactual constraints. See Thomas Sprat, *The History of the Royal-Society of London for the Improving of Natural Knowledge* (London: Rose and Crown, 1667), 31. On the psychologization of "Baconian method" by Sprat and John Locke, see Dahlia Porter, *Science, Form, and the Problem of Induction in British Romanticism* (Cambridge: Cambridge Univ. Press, 2018), 33–72.

48. See Morris R. Cohen, "The Myth about Bacon and the Inductive Method," *The Scientific Monthly* 23, no. 6 (1926): 504.

49. Cohen, "The Myth about Bacon," 504. See Daniel Rosenberg, "Data before the Fact," in *'Raw' Data is an Oxymoron*, ed. Lisa Gitelman (Cambridge: MIT Press, 2013), 15–40. On the Royal Society's empiricist revisions of Bacon, see Mark Thomas Young, "Nature as Spectacle: Experience and Empiricism in Early Modern Experimental Practice," *Centaurus* 59, no. 1–2 (2017): 72–96.

50. Antonio Perez-Ramos emphasizes Bacon's "constructivist" idea of science in *Francis Bacon's Idea of Science and the Maker's Knowledge Tradition* (Oxford: Oxford Univ. Press, 1988), 48–64. On

artisanal practices and Bacon's *scientia operativa*, see Edgar Zilsel, "The Sociological Roots of Science," *The American Journal of Sociology* 47, no. 4 (1942): 544–62; and Pamela Long, *Artisan/Practitioners and the Rise of the New Science 1400-1600* (Corvallis: Oregon State Univ. Press, 2011), 10–29.

51. Perez-Ramos, *Francis Bacon's Idea of Science*, 156.

52. Francis Bacon, "Preparative Towards a Natural and Experimental History," in *Works*, vol. 4, ed. James Spedding, Robert Leslie Ellis, and Douglas Devon Heath (London: Longman Heath, 1870): 263.

53. See Aristotle, *Rhetoric*, 1354a13 and 1355b36.

54. See Bacon, "Thoughts and Conclusions on the Interest of Nature or a Science of Productive Works," in *The Philosophy of Francis Bacon*, ed. and trans. Benjamin Farrington (Liverpool: Liverpool Univ. Press, 1964), 93.

55. On the seventeenth-century fascination with "hybrid" natural/artificial products in relation to early-modern collecting, see Lorraine Daston, "Nature by Design," in *Picturing Science, Producing Art*, ed. Caroline A. Jones and Peter Galison (New York: Routledge 1998), 232–53.

56. Smith, "Historians in the Laboratory," 228.

57. Smith, "Historians in the Laboratory," 228.

58. See Todd Andrew Borlik, "The Whale Under the Microscope: Technology and Objectivity in Two Renaissance Utopias," in *Philosophies of Technologies: Francis Bacon and his Contemporaries*, ed. Klaus Zittel, Gisela Engel, Romano Nanni, and Nicole C. Karafyllis (Boston: Brill, 2008), 233.

59. John Dewey, *Reconstruction in Philosophy* (New York: Henry Holt and Company, 1920) 38.

60. Perez-Ramos, *Francis Bacon's Idea of Science*, 109.

61. Bacon, "Description of the Intellectual Globe," in *Works*, vol. 5: 507.

62. Bacon *Works*, vol. 5: 506. On practical "routines" and their "embodiment in the design of instruments," see Jim Bennett, "The Mechanical Arts," in *Cambridge History of Science Volume 3: Early Modern Science*, ed. Lorraine Daston and Katherine Park (New York: Cambridge Univ. Press, 2006), 673–96.

63. See Joseph C. Pitt, *Heraclitus Redux: Technological Infrastructures and Scientific Change* (New York: Rowman and Littlefield, 2020), 91.

64. Alva Noë, *Strange Tools: Art and Human Nature* (New York: Farrar Strauss and Giroux 2015), 16.

65. Painting, for instance, reorganizes techniques of seeing, choreography reorganizes spontaneous modes of dance, and the linguistic texture of poetry reorganizes natural language. On "stances," see Quill Kukla, "Embodied Stances: Realism Without Literalism," in *The Philosophy of Daniel Dennett*, ed. Bryce Huebner (Oxford: Oxford Univ. Press, 2018), 3–31.

66. See Honneth, "Second Nature," 20. On Pope's "skeptical" regard for propositional systems, see Fred Parker, *Skepticism and Literature: An Essay on Pope, Hume, Sterne, and Johnson* (Cambridge: Cambridge Univ. Press, 2003), 1–53, 86–137.

67. On poetics and "Craft knowledge," see Jonathan Kramnick, *Criticism and Truth: On Method in Literary Studies* (Chicago: Univ. of Chicago Press, 2023), 1–14.

68. Parker *Skepticism and Literature*, 86–103.

69. Alexander Pope, *Poetical Works*, ed. Herbert Davis (New York: Oxford Univ. Press, 1966), 314–22; ll. 79–82.

70. William Empson, *Seven Types of Ambiguity* (New York: New Directions, 1966), 128.

71. Alexander Pope, "An Essay on Criticism," in *Poetical Works*, ed. Herbert Davis (Oxford: Oxford Univ. Press, 1978); 2.364–65. All subsequent references to this work, abbreviated to *EC*, will be in text and include section and verse number.

72. On sound and semantic information, see Naomi Cumming, *The Sonic Self: Musical Subjectivity and Signification* (Bloomington: Indiana Univ. Press, 2000), 72–106.

73. Tom Jones, *Pope and Berkeley: The Language of Poetry and Philosophy* (New York: Palgrave, 2005), 2.

74. J. M. Cameron, "Doctrinal to an Age: Notes Towards a Revaluation of Pope's *Essay on Man*" in *Essential Articles for the Study of Alexander Pope* ed. Maynard Mack (Hamden: Archon, 1968); 357. Pope echoes the Neoclassical emphasis on *concordia discors*. See Earl Wasserman, *The Subtler Language: Critical Readings in Neoclassic and Romantic Poems* (Baltimore: Johns Hopkins Univ. Press, 1959), 53–60. On Pope's discussion of the *concordia discors* of reason and passion in human psychology, see Rebecca Ferguson, *The Unbalanced Mind: Pope and the Rule of the Passions* (London: Harvester Press, 1986), 64–94.

75. On the historical impulse to "look to nature as the source of norms for human conduct" (3), see Lorraine Daston, *Against Nature* (Cambridge: MIT Press, 2019). On the politics of Pope's equation, see Judith N. Shklar, "Poetry and the Political Imagination in Pope's *An Essay on Man*," in *Political Thought and Political Thinkers*, ed. Stanley Hoffman (Chicago: Univ. of Chicago Press, 1998), 193–205. For an ecopoetical view of Pope's formulation, see John Sitter, "Eighteenth-Century Ecological Poetry and Ecotheology," *Religion and Literature* 40, no. 1 (2008): 11–37.

76. On Bolingbroke's influence on the *Essay*, see Brean Hammond, *Pope and Bolingbroke: A Study of Friendship and Influence* (Columbia: Univ. of Missouri Press, 1984), 69–91.

77. On Newton, Bentley, and dualism, see Sarah Ellenzweig, "Who's Afraid of Inertia: The Cartesian-Newtonian Legacy Reconsidered," in *The New Politics of Materialism*, ed. Ellenzweig and Zammito, 27–28.

78. On monism and radical politics in Toland, see Justin Champion, *Republican Learning: John Toland and the Crisis of Christian Culture, 1696-1722* (Manchester: Manchester Univ. Press, 2003).

79. Quoted in Jones, "Introduction," in *An Essay on Man ed. Tom Jones (Princeton: Princeton Univ. Press 2018);* 67.

80. See A. D. Nuttall, *Pope's Essay On Man* (New York: Allen and Unwin, 1985), 53–77.

81. On Enlightenment vitalism, see Jonathan Kramnick, *Paper Minds: Literature and the Ecology of Consciousness* (Chicago: Univ. of Chicago Press, 2018), 138–59; Jonathan Israel, *Radical Enlightenment: Philosophy and the Making of Modernity, 1650-1750* (Oxford: Oxford Univ. Press, 2001), 159–74; and Peter Hanns Reill, *Vitalizing Nature in the Enlightenment* (Berkeley: Univ. of California Press, 2005), 199–236.

82. On insects and advanced intelligence, see Kate S. Tunstall, "The Early Modern Embodied Mind and the Entomological Imaginary," in *Mind, Body, Motion, Matter: Eighteenth-Century British and French Literary Perspectives*, ed. Mary Helen McMurran and Alison Conway (Toronto: Univ. of Toronto Press, 2016), 202–29.

83. See Lorraine Daston, "Science Studies and the History of Science," *Critical Inquiry* 35, no. 4 (2009): 813.

84. Alexander Pope, "The Dunciad," in *Poetical Works*, 4: 233.

85. Alexander Pope, "The Dunciad," 4.635–40.

86. Seneca, "Medea," in *Hercules, Trojan Women, Phoenician Women, Medea, and Phaedra*, ed. and trans. John Fritsch (Cambridge: Harvard Univ. Press, 2018), 381.

87. Alexander Pope, "The Dunciad," 4.656

88. David Hauser, "Medea's Strain and Hermes' Wand: Pope's Use of Mythology," *Modern Language Notes* 76, no. 3 (1961): 225.

89. Sellars, *Empiricism*, 76.

90. Quoted in Chandler, *Wordsworth's Second Nature*, 71.

91. See Omri Moses, "Poetry and the Environmentally Extended Mind," *New Literary History* 49, no. 3 (2018): 315.